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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,264	12/05/2000	Benjamin A. Bonner	005082/CMP	9053

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APPLIED MATERIALS, INC.
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EXAMINER

DEO, DUY VU NGUYEN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 08/27/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/731,264

Applicant(s)

BONNER ET AL.

Examiner

DuyVu n Deo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 14, 16, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (JP 11-138418) and admitted prior art.

US 6,191,038 is considered as the correct translation of JP 11-138418 and its translation will be provided upon applicant's request.

Yoshida describes a method for polishing semiconductor substrate comprising: polishing the substrate to remove a first portion of the substrate by holding the substrate against the pad with a polishing force while applying a slurry to the pad; rinsing the polishing pad; polishing the substrate to remove a second portion of the substrate by holding the substrate against the pad with a polishing force while applying the slurry to the pad (col. 13, line 1-36). Unlike claimed invention, Yoshida doesn't describe polishing the substrate with a cerium-based polishing fluid. Admitted prior describes an unstable polishing slurry for oxide such as one from Hitachi Chemical slurry including cerium oxide and polycarboxylate additive. The slurry from Hitachi Chemical selectively polishes oxide to the nitride (pages 1, 2, and page 4, line 4-17). Since a polishing slurry being used would depend on the type of material being polish and Yoshida further suggests that a BPSG, an oxide layer, can be polished in one of the embodiment (col. 17,

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line 18-19), it would have been obvious for one skill in the art to use a cerium slurry such as one from Hitachi Chemical in order to polish oxide with selectivity to the nitride with a reasonable expectation of success.

Referring to claim 3, the first and second portion would have to equal to the amount selected for first and second polishing steps. This would read on claimed of first and second portion equal to selected amount.

Unlike claim 6, Yoshida doesn't describe the substrate is held against the pad with a 0 psi force while rinsing the pad. However, he describes the rinsing step starts after the first polishing step is finished and in the substrate is pressed against the pad starting the second polishing step (col. 13, line 13-25). This would indicate that the wafer is held against the pad with no force. Therefore, it would have been obvious that the substrate would not forced against the pad while rinsing because there is no polishing of the substrate during the cleaning of the pad.

Referring to claim 5, rinsing and cleaning the pad with deionized water is well known to one skilled in the art (please see cited Cadien below).

Referring to claims 2, 4, using either stable or unstable polishing slurry which is mixed in a point of use mixing system before use is well known to one skilled in the art as shown in pages 1 and 2 of the specification. Therefore, using slurry such as slurry mixed in a point of use would have been obvious to one skilled in the art in order to provide a slurry to polish the substrate with an expectation of a reasonable success.

3. Cadien et al. (US 5,954,975) is cited to show prior art (col. 9, line 27).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Page 6 doesn't describe or address anything about whether the pad is roughened or not by a pad conditioner between the first and the second polishing step.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The specification doesn't describe what is meant by "the polishing pad is not roughened by pad conditioner" since most of the polishing pad would have pores or roughened in the first place in order to remove material from the substrate during polishing.

The limitation of the pad is not roughened by a pad conditioner between the first and the second polishing step is indefinite because it was an attempt to claim the invention by excluding what the inventors did not invent rather than distinctly and particularly pointing out what they did invent. *In re Schechter*, 205 F.2d 185, 98 USPQ 144 (CCPA 1953).

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Response to Arguments

8. Applicant's arguments filed 7/11/03 have been fully considered but they are not persuasive.

Claim 7 still has the limitation of wherein the polishing pad is not roughened by a pad conditioner between polishing the first and second portions of the material.

Yoshida doesn't suggest using a slurry that is highly susceptible to clogging and he also doesn't teaching against using a cerium-based slurry. Also there is no evidence to show that cerium-based slurry is not highly susceptible to clogging.

Allowable Subject Matter

9. Claims 7-13, 15, 17, 19 are allowable because applied prior art, Yoshida, doesn't describe the polishing pad is not roughened by a pad conditioner between polishing the first and second portions of the material. He describes dressing the pad between the two steps in which it roughens the polishing pad (col. 7, line 42-50; col. 13, line 4-25).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n Deo whose telephone number is 703-305-0515.

DVD

August 25, 2003

